COMPLETE LISTING OF CLAIMS, INCORPORATING AMENDMENTS
IN RESPONSE TO OFFICE ACTION DATED May 4, 2006
FOR SERIAL NO.10/664,950

We claim:

1. (Currently amended) A process for removing acid anhydrides precursors and other acid moieties from flue gases, the process comprising:

a) cooling the flue gases containing CO_2, acid anhydride precursors and other acid moieties;

b) removing particulate matter from the flue gases;

c) oxidizing the acid anhydrides precursors to oxidized anhydrides, wherein the acid anhydrides precursors are selected from the group consisting of SO_2 and NO_x, and the acid moieties are selected from the group consisting of HCl, HF and hydrogen halides;

d) simultaneously converting the oxidized anhydrides precursors and the other acid moieties to ammonia compounds/ salts by reaction with aqua ammonia compounds; ~~and~~

e) subsequently converting CO_2 to an ammonia salt by reaction with aqua ammonia compounds; and

f) collecting the ammonia compounds/ salts.

2. (Original) The process as recited in claim 1 wherein gaseous anhydrides are oxidized to higher gaseous acid anhydrides.

3. (Previously Amended) The process as recited in claim 1 wherein the step of simultaneously converting oxidized anhydrides and the other acid moieties includes reacting the oxidized anhydrides with ammonia-containing compounds.

4. (Original) The process as recited in claim 3 wherein the ammonia-containing compounds are water-soluble compounds selected from the group consisting of aqueous ammonia, ammonium hydroxide, ammonium carbonate, ammonium carbamate, and combinations thereof.

5. (Original) The process as recited in claim 3 wherein the ammonia-containing compounds are regenerated by the thermal decomposition of ammonium bicarbonate (NH_4HCO_3) to carbon dioxide (CO_2), ammonia solution (NH_4OH), ammonium carbonate ($(NH_4)_2CO_3$), and combinations thereof.

6. (Original) The process as recited in claim 1 wherein the process is carried out at temperatures of from about 15^0C to 50^0C.

7. (Original) The process as recited in claim 5 wherein the regeneration is carried out at a temperature from about 35^0C to 80^0C.

8. (Previously amended) The process as recited in claim 5 wherein ammonia and ammonia-containing compounds generated from the decomposition of ammonium bicarbonate are recycled for use in the conversion step.

9. (Original) The process as recited in claim 1 wherein the other acid moieties are hydrogen halides.

10. (Withdrawn) A device for the direct removal of acid anhydrides and other acid moieties from a gas stream, the device comprising:

a) a means for cooling the gas stream;

b) a means for eliminating particulate matter from the gas stream after cooling;

c) a means for oxidizing the anhydrides present in the gas stream after the removal of particulate matter;

d) a means for converting the oxidized anhydrides to salts;

e) a means for regenerating the converting means; and

f) a means for isolating the salts from the gas stream.

11. (Withdrawn) The device as recited in claim 10 wherein the means for converting the oxidized moieties is a first scrubber containing a neutralizing agent.

12. (Withdrawn) The device as recited in claim 11 wherein the neutralizing agent contains aqueous ammonia.

13. (Withdrawn) The device as recited in claim 10 wherein the means for regenerating the converting means comprises heat.

14. (Withdrawn) The device as recited in claim 10 wherein the temperature range of operation of the device is from about 15^0C to 50^0C.

15. (Withdrawn) The device as recited in claim 10 wherein the regeneration is carried out at a temperature from about 35^{0}C to 80^{0}C.

16. (Withdrawn) The device as recited in claim 10 wherein the other acid moieties are hydrogen halides.

17. (Withdrawn) The device as recited in claim 10 wherein a product produced by the means for regeneration is recycled back to the means for converting.

18. (Cancel)

19. (Cancel)

20. (Previously presented) The process of claim 3 further comprising the regenerating the ammonia-containing compounds.